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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,950	08/07/2002	Christian Neubauer	SCHO0068	6932

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EXAMINER	
PIERRE, MYRIAM	
ART UNIT	**PAPER NUMBER**
2626	

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/089,950	NEUBAUER ET AL.	
	Examiner	Art Unit	
	Myriam Pierre	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Arguments

2. Applicant's arguments filed 06/09/2006 have been fully considered but they are not persuasive.

Applicant argues that Kate et al. (Digital Audio Carrying Extra Information (ICASSP vol. 2 IEEE-90)) (herein referred to as Kate) in order to filter a signal into a sub-band, the signal has to be given in the time-domain rather than in the spectral domain as defined in the fist paragraph of claim 1. This argument is not valid as Kate's digital audio carrier is with regard to frequency masking sound.

Applicant argues that independent claim 11 is different from claim 1 and the audio signal is deliberately quantized not as coarse as possible, this argument is not persuasive because masking of audio sound requires a variation in coarse or soft quantization, page 1097 paragraph 1.

Claim Rejections - 35 USC § 102

3. Claims 1,2,4,8, and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kate et al., Digital Audio Carrying Extra Information (ICASSP vol. 2 IEEE-90).

As to claim 1, Kate teach

method for introducing information into a data stream including data about spectral values representing a short-term spectrum of an audio signal (col. 5 lines 11-25; source data is introduced as audio and/or video information), including:

processing the data stream to obtain the spectral vales of the short-term spectrum of the audio signal (page 1097, right column, 1st paragraph);

combining the information with a spread sequence to obtain a spread information signal (enable inaudible addition of extra information to an audio signal, Abstract);

generating a spectral representation of the spread information signal to obtain a spectral spread information signal (page 1097, right column, 1st paragraph);

establishing psychoacoustic mask-able noise energy as a function of frequency for the short-term spectrum of the audio signal, wherein the psycho-acoustical maskable noise energy is smaller or the same as the psychoacoustic masking threshold of the short-term spectrum (inaudibility is guaranteed if the sound power level of the added signal is kept below the masking threshold; masking is most effective for frequency close to the frequency of the masking sound, masking is the psychoacoustic phenomenon which deals with the insensitivity of the human ear to sounds in the presence of other, page 1097, left column, 2nd-3rd paragraphs);

weighting the spectrum spread information signal by using the established noise energy to generate a weighted information signal, wherein the energy of the introduced information is below the psychoacoustic masking threshold (page 1097, left column, 2nd-4th paragraphs);

summing the weighted information signal with the spectral values of the short-term spectrum of the audio signal to obtain sum spectral values including the short-term spectrum of the audio signal and the information (inaudibility is guaranteed if the sound power level of the added signal is kept below the masking threshold; page 1097, left column, 2nd-4th paragraphs);

processing the sum spectral values to obtain a processed data stream including the data about the spectral vales of the short-term spectrum of the audio signal and the information to be

introduced (inaudibility is guaranteed if the sound power level of the added signal is kept below the masking threshold; masking is most effective for frequency close to the frequency of the masking sound, masking is the psychoacoustic phenomenon which deals with the insensitivity of the human ear to sounds in the presence of other, page 1097, left column, 2nd-4th paragraphs).

As to claim 2, which depends on claim 1, Kate et al. teach

wherein the data stream comprises quantized spectral values as data about spectral values, the step of processing of the inherent data stream including the following sub-steps (page 1098, left column, 2nd paragraph):

inverse quantizing the quantized spectral values to obtain the spectral values (Fig. 2 page 1100; inherent in the addition and retrieval); and

the step of processing the summed spectral values (page 1098, left column, 2nd paragraph) including:

quantizing the sum spectral value to obtain quantized sub-spectral values (subband signals are quantized, page 1098, left column, 2nd paragraph);

forming the processed data stream using the quantized sum spectral values (page 1098, left column, 2nd-4th paragraphs).

As to claim 4, which depends on claim 1, Kate et al. teach

wherein the step of establishing the psychoacoustic maskable noise energy comprises:

computing the psychoacoustic masking threshold as function of frequency using a psychoacoustic model, which is based on the spectral values of the audio signal (page 1097; left column; 2nd-3rd paragraphs).

As to claim 8, which depends on claim 1, Kate et al. teach

wherein the spectral value of the data stream are quantized such that the noise energy introduced by quantized such that the noise energy introduced by quantizing is smaller than the psychoacoustic masking threshold by a predetermined amount and wherein, in the step of establishing an energy corresponding to the predetermined amount is established (page 1097; left column 2nd paragraph; and page 1098; left column; 1st-3rd paragraphs); and

wherein in the step of weighting the spectral values of the spectral representation of the spread information signal are set such that they have an energy corresponding to the predetermined amount ((page 1097; left column 2nd paragraph; and page 1098; right column).

As to claim 10, which depends on claim 1, Kate et al. teach

wherein the step of processing the sum spectral values, in the same quantizing step sizes as in original data stream are used (page 1098; right column; paragraph 12; in order to retrieve the auxiliary signal from a received signal, quantize subbands, amplify signal to obtain ordinal signal, thus the same quantizing step sizes are used to obtain the original signal).

Claim 11 is directed toward a method of introducing information to implement or execute the method of claim 1, and is similar in scope and content of claim 1, therefore claim 11 is rejected under similar rationale.

As to claim 12, which depends on claim 11, Kate et al. teach

wherein in the step of forming an indication for the value of the predetermined amount is included in the bit stream (page 1098 left column 1st-3rd paragraphs; the predetermined amount is the estimated subband).

Claim 13 is directed toward an apparatus of introducing information to implement or execute the method of claim 11, and is similar in scope and content of claim 11, therefore, claim 13 is rejected under similar rationale.

Claim 14 is directed toward an apparatus for encoding to implement or execute the method of claim 1, and is similar in scope and content of claim 1, therefore, claim 14 is rejected under similar rationale.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kate et al., Digital Audio Carrying Extra Information (ICASSP vol. 2 IEEE-90), in view of Chen et al. (6,300,888).

As to claim 3, which depends on claim 2, Kate et al. teach

quantized spectral values in the data stream (page 1098, left column, 2nd paragraph)

Kate et al. do not teach data streams are entropy encoded.

However, Chen et al. do teach

wherein the quantized spectral values in the data stream are entropy encoded (col. 9 lines 65-67 and col. 10 lines 1-52), the step of processing the data stream including the following sub-step:

entropy-decoding the entropy-encoded spect ral values to obtain the quantized spectral values (col. 5 lines 59-67); and

the step of processing the sum spectral values (col. 9 lines 65-67 and col. 10 lines 1-52) including:

entropy-encoding the quantized sum spectral values (col. 5 lines 59-67 and col. 6 lines 58-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the audio coding for extra information of Kate et al. into the entropy coding and decoding of Chen et al., because Chen et al. teach that this would reduce the size of data to transmit or store, col. 1 lines 61-63.

3. Claims 5-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kate et al., , Digital Audio Carrying Extra Information (ICASSP VOL. 2 IEEE-90), in view of Fielder (5,623,577).

As to claim 5, which depends on claim 1, Kate et al. teach

wherein a masking threshold used in generating the data stream as function of frequency for the short-term spectrum is present in the data stream, the step of establishing including:

extracting the psychoacoustic masking threshold from the data stream, wherein the psychoacoustic maskable noise energy is the same as the psychoacoustic masking threshold (page 1097; left column 2nd paragraph; and page 1098; left column; 1st-3rd paragraphs).

Kate et al. does not teach side information.

However, Fielder does teach side information (col. 3 lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the digital coding of extra information of Kate et al. into the side information of Fielder, because Fielder teaches that this would permit accurate de-quantization, col. 3 lines 1-5.

As to claim 6, which depends on claim 1, Kate et al. teach

wherein the data stream further comprises scale factors by which the spectral values will be multiplied in groups in an audio encoder prior to quantizing, the step of processing the data stream (page 1098; left column; 1st-3rd paragraphs) further including the following sub-steps:

extracting the scale factors from the data stream (page 1098; 1st-3rd and 12th paragraphs); and

the step of establishing including:

computing the noise energy introduced into the audio encoder when quantizing as function of frequency by using the scale factors for the short-term spectrum and by using the spectral values as well as knowing a quantizer used in the audio encoder, the introduced noise

energy being a measure for the psychoacoustic noise energy used in weighting (page 1097; left column 1st paragraph; and page 1098; 1st-3rd and 12th paragraphs).

Kate et al. does not teach side information.

However, Fielder does teach side information (col. 3 lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the digital coding of extra information of Kate et al. into the side information of Fielder, because Fielder teaches that side information provides adjustments to the basic allocation values as necessary to obtain the same allocation values used in the encoder, in this way, the allocation function in an encoder maybe be changes without losing compatibility with existing decoders, and the compatibility between encoder and decoder is reduced, col. 7 lines 1-7.

As to claim 7, which depends on claim 6, Kate et al. teach

wherein the data stream is formed according to ISO/IEC 13818-7 (MPEG-2 AAC) and the step of estimating the noise energy comprises:

establishing a quantizing step for the spectral factor associated with this scale factor band (page 1097; left column 1st paragraph; and page 1098; 1st-3rd and 12th paragraphs);

evaluating the following formula to obtain the noise energy for the scale factor band introduced by quantizing,

wherein xi is the i-th spectral line in a scale factor band, QS is the quantizing step for this scale factor band and xmin is the noise energy introduced in the scale factor band by quantizing (page 1097 and page 1098);

the step of weighting including:

setting the spectral values of the spectral representation of the spread information signal in the scale factor band such that the total energy of the set spectral values is the same as the noise energy in this scale factor band obtained in the step of evaluation (page 1097 and page 1098; noise energy is measured via psychoacoustic masking, and scaling is performed via quantization process).

As to claim 9, which depends on claim 1, Kate et al. teach

wherein the value of the predetermined amount is presented as information in the data stream, in the step of establishing the value for the predetermined amount will be extracted from the data stream (col. 3 lines 1-4).

Kate et al. does not teach side information.

However, Fielder does teach side information (col. 3 lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the digital coding of extra information of Kate et al. into the side information of Fielder, because Fielder teaches that this would allow an allocation function to establish allocation values and explicitly pass these allocation values as "side information" to a decoder, col. 3 lines 1-5.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myriam Pierre whose telephone number is 571-272-7611. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VIJAY CHAWAN
PRIMARY EXAMINER

Myriam Pierre MP
Art Unit 2626
09/02/06